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Saturday, May 24, 2008

Off-the-shelf seasteading

Every year millions of people spend days or weeks on cruises, but Patri Friedman, Wayne Gramlich, and their fellow Seasteaders want to live on the sea full time. They want, essentially, to conduct political experiments in mobile communities as free as possible from sovereign jurisdictions. To do this, they are designing extravagant new kinds of structures that they believe will withstand the violent storms and other harsh conditions that can occur offshore.

Besides tourism and jurisdictional arbitrage, there are a variety of other economic incentives to live on the ocean. Fishing and fish processing often involve employees spending many months at sea. Oil, diamonds, and soon a wide variety of other kinds of minerals are increasingly being extracted as land-based minerals are slowly depleted.

Gramlich and Friedman have a very admirable goal but are trying to do too many things in parallel. They seem to have spent far more time in creating futuristic designs from scratch than in figuring out how to retrofit normal ships or mobile offshore oil platforms. On top of this is their important but novel and ambitious political experiment in lowering exit costs. While there are some relationships between the politics and the engineering, a better approach is to innovate in one area at a time. Design novel offshore technology, or design novel offshore communities, but don't try to do too much of both at once.

Friedman voices a complaint, hardly uncommon in the world of engineering, that he has a hard time communicating with ocean engineers. I suspect the problem is that Friedman and Gramlich have taken their designs, whether workable or not, far away from the kinds of designs ocean engineers are used to analyzing. If they just started with normal ships and offshore platforms, then used such equipment as building blocks for larger structures, rather than trying to reinvent ocean engineering from scratch, they would not lack for experienced engineers to understand their designs and shops to assemble them.

Sure, such structures seem crude and inefficient compared with the elegant and optimal structures that might be designed in theory. But they would be a far less expensive way to demonstrate the political and economic viability of seasteading. And they could be shown to offshore engineers who could quickly recognize most major problems they might have. The Friedman/Gramlich approach excites the imagination, but a far more incremental approach is needed to make it work. To take up Friedman's analogy: if all that exists are military planes, and you want to start the first civilian airline, don't try designing civilian planes and civilian airports from scratch. Just buy a bomber, yank out the bomb bays and guns, install passenger seats, get permission to use a couple military airports, take a few test flights, and start selling tickets. The first version may well fall very short of the optimal or ideal you have in mind, but it will give you the experience and the revenue needed to improve the design and approach that optimal.

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Nick Szabo

"A premier thinker about history, law and economics, and the lessons they have for security." -- Adam Shostack, Emergent Chaos

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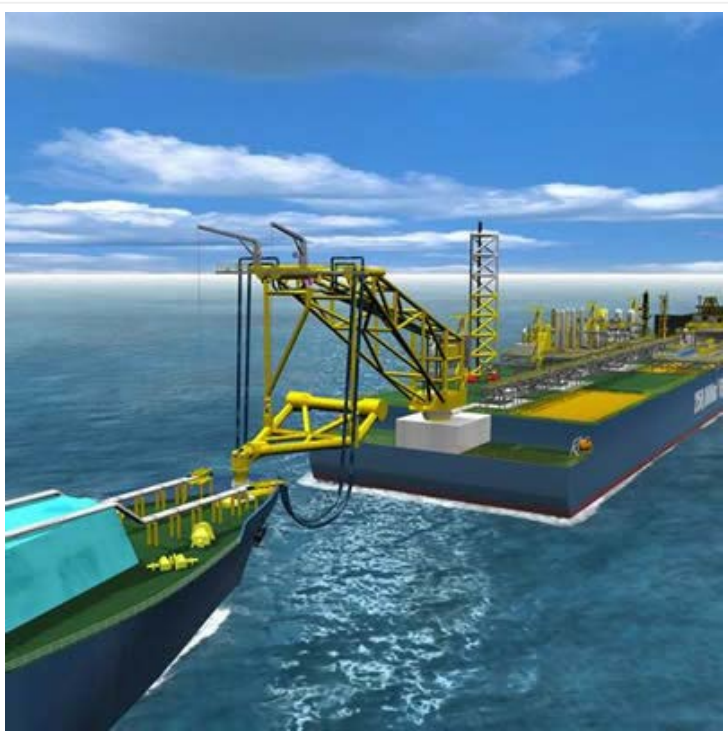
The biggest technological hurdle to meeting the requirements of the political experiment is probably the ability to join and separate the floating platforms at low cost. They must be moored and yet withstand the harshest storms (or alternatively to anticipate the storm, quickly unmoor, ride out the storm separately, and remoor when normalcy returns). This problem is mentioned briefly here but as far as I know, Seasteaders have not come up with a good solution for it.

Mooring in rough water is a hard problem -- there are good reasons docks lie in sheltered bays. Ship-to-ship refueling, a common naval procedure, has long been very dangerous in bad weather. Ships and platforms loosely moored with cables can easily collide, smashed together by wind and wave, with devastating consequences. Friedman and Gramlich believe that their ideal platform will have "no" bobbing, lateral movement, or tilting from waves and wind. But oil platforms do exhibit enough such movements that trying to keep them moored together with traditional techniques in a storm would be highly dangerous. Cables could not prevent the platforms from colliding with high force, whereas a completely rigid mooring that coupled the movements of all the joined platforms would likely fail from strain.

Some good old Internet searching digs up the fact that folks in the deep sea oil and liquified natural gas (LNG) industries have solved a similar problem -- how to offload fluids offshore, from FPSOs to tankers or from tankers to offshore pipeline terminals. For example the LNG industry needs to be able to hook up the huge LNG tankers to the offshore offloading terminals even in storms. One solution to this is the soft yoke flexible mooring. This is often abbreviated "SYMO" for "soft yoke mooring and offloading". It allows ships to moor to each other without the dangers of approaching and colliding in rough wind and water.



A soft yoke flexible mooring (SYMO) for yoking ships together, even in rough waves and most storms. The design allows each ship to ride the waves separately, greatly reducing the strain on the yoke, while keeping them from approaching or dispersing.

Here's how I might do an experiment in offshore political mobility using off-the-shelf equipment or minor variations on same (this "mixed" version, as the Seasteaders would call it, is not terribly original to me, except for including a workable mooring technology):

(1) Get a few dozen yacht owners to participate as volunteers. ("Yacht" here just refers to any seaworthy boat capable of mooring to other such craft and to larger platforms with SYMOs).

(2) Set up a system of two or more privately owned offshore anchored moorings: tough cable moorings such as those used by large ships in the oil industry (eg FPSOs).

(3) Attach a small old cruise ship or retrofitted oil platform to each anchored mooring. These should be large enough to have most of the infrastructure a small cruise ship would have, and be able to provide basic services to the yachts.

(4) Yachts moor to the larger ship or platform using SYMOs. For oil platforms the SYMOs may have to be heavily modified. Yachts might also moor to each other using SYMOs, but some of the yachts should also be anchor-moored to the ocean floor, unless they don't mind

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the community drifting.

(5) Yacht owners choose which of the two or more communities they will join.

(6) The cruise ships or platforms that form the core of these communities compete to provide various services, amenities, and political systems.

(7) Yacht owners can either be independently wealthy, or they can make a living by providing services to nearby fishing fleets, fish processors, offshore oil platforms, etc., or by providing temporary quarters for workers of same.

(8) When a storm comes that may be too much for the small SYMOs to withstand, everybody gets on yachts and disperses until the storm blows over.

These communities would look a bit like this offshore floating dock in a sheltered bay near Lund, British Columbia -- but much farther offshore, larger, more robust, and more politically independent.

If you see this coming, scram.

There will be big differences between these salty communities and modern towns. If the local court or zoning board or captain-of-captains won't approve improvements to your yacht, or your desire to set up a gambling house or a stinky fish processing plant, just move your house to another seastead community that will tolerate it. (I suspect fish processors will retain their own separate communities). Low exit costs bring freedom.

One kind of public nuisance that these seasteads may be in special danger of running into is what I call a *provocative externality*, meaning that besides or instead of being ethically dubious or causing direct harm to the community, they may cause danger to fellow community members by provoking a country to attack the seastead: drug smuggling, money laundering, polygamy, being a haven for terrorists, and so on are examples of activities that could, whether rightly or wrongly, provoke attack. Since many of these activities might also be quite lucrative, the political issues of whether to ban them may cause great tensions. Vulnerability to attack by traditional countries limits the degree of substantive liberty seasteads can achieve -- they will not be able to achieve a perfectly voluntary society within even the substantive law, much less within procedural law, which I now turn to.

The political and legal designs for Seasteads need even more work than the engineering designs. It is not enough to just say that all law be based on contract and thus all will be fine. One must rather tackle crucial issues such as legal procedure. As I have written elsewhere, in response to a claim that Seastead government will not be based on coercion:

> No coercion? In these Seasteads, who does the law enforcement, and who or what gives them the right to commit law enforcement acts that are physically equivalent to torts and crimes? What distinguishes arrest from assault and battery, imprisonment from kidnapping, legal distraint of goods from theft, or a legal search from trespass? I think you will find that these societies will have to deal with the very same problems of coercion and procedure as our own governments. Calling a legal document that defines and allocates rights to commit these coercive acts a "contract" instead of a "constitution" may be the Rothbard-correct way to do things, but it doesn't actually go very far towards solving the hard problems of living together in a world where people are often coercive.

It is even more important for the political and legal designs than it is for the engineering designs to take an off-the-shelf approach. Pick a country and subdivisions thereof, either a current or a well-document historical politican and legal system (for example the U.S. and a particular state, county, and town), and use its constitution, statutes, and court precedents as basic legal precedents, which can then be modified by local courts (in a common-law manner) and other local political authorities. If the U.S. is used as a model, I have suggested some basic changes to make its constitution less subject to the growth of government power. Low exit costs will also greatly help. These kinds of macro-political issues will mostly, however, be well beyond the scope of Seasteading unless or until they reach a time when they are large and mature mobile cities. The first ones will, as with cruise ships today, probably just be based on the "captain is king" model that has long dominated sea law. Friedman has even taken to calling himself "Captain Patri". Perhaps seasteads will revive the old paradigm of political property rights. I wish these projects the best of luck.

Posted by Nick Szabo at 3:10 PM

8 comments:

George Weinberg said...

I like the term "provocative externality", I'll be using it in the future.

I like the idea of starting one's own country in principle, but one reason I think it's likely to be infeasible in practice is that many of the more profitable activities that could be engaged in would fall into the category of "provocative externalities". Even if it weren't really central to the operation, if someone were to park a floating community off the coast of California, unless they community took some pretty restrictive measures to prevent it it seems certain somebody would add a casino, a brothel, a branch office of a Swiss bank. And then the coast guard would likely cause problems for the entire community.

11:50 AM

dan said...

what about doing a blog post one day about polar cities in the same pro and con vein? google "polar cities" or look us up at http://pcillu101.blogspot.com

what is your take on such a wild idea for the future, Mr. S?

danny

8:21 PM

nick said...

George, thanks for your great comment. It is quite correct but with an exception, namely that there are already a number of relatively uncontroversial activities, such as fishing and oil drilling, and already thousands of people living for months at a time on the ocean in fixed (or nearly so) locations doing such things. The business in offshore oil is growing rapidly and will probably soon be joined by a rapidly growing business in extracting other kinds of minerals. It's done by ROVs rather than robots which means people are needed on-site.

I suspect we will see businesses spring up to provide nearly longer-term living quarters offshore oil workers, and such employment rather than political experiments will provide the main initial impetus for seasteading. If Wayne and Patri can develop their new concrete/rebar subsea flotation habitat that provides more real estate per dollar than an oil platform or FPSO, I think they will have a big market for it both to replace FPSOs (i.e. to provide real estate for on-site processing plants) and to provide longer-term onsite habitations well before there are resources and wealthy libertarian enthusiasts enough to do a long-term political seasteading experiment. If their new technology works they should do a for-profit startup, which could be quite lucrative, and do the political experiment later when the technology is cheap and mature. Because of the provocative externality problem I am afraid that even the political experiments will have to take some restrictive measures that purist libertarians could not accept.

Dan, the polar cities idea is very interesting, but off the top of my head I see a few flaws:

(1) Global warming hot enough to destroy agriculture in non-polar areas is extremely unlikely even in the far future. In the earth's distant past we've had lush growth in the tropics with CO_2 concentrations more than ten times those at present. CO_2 makes agriculture more productive and plants can withstand or be adapted to withstand far higher temperatures than even in the tropics today. As usual with uncertain threats, people tend to greatly exagerate the likely damages and overlook the benefits.

(2) Near the poles it will be hard to obtain enough solar insolation for productive agriculture.

(3) Nobody can accurately plan an entire hypothetical economy to see if such self-sufficient colonies are economically feasible. This is a harder problem than trying to plan a real economy, which the Soviets etc. showed is also practically impossible. What would really happen if global warming slowly destroyed agriculture in the rest of the world is that our economy, technology, etc. would incrementally adapt in ways we can't now predict.

(4) The people living 400-500 years from now will know vastly more about such things than you or I or anybody else alive today knows. Our speculations now will not be of use to them, any more than consulting H.G. Wells is helpful to engineers today.

Bottom line: science fiction can be entertaining, but should not be taken too seriously. See my previously post on the problems that can be caused when people take daydreams too seriously.

11:01 AM

nick said...

While I'm here I'd like to point out the strong connection between legal procedures and exit costs: if the captian throws your body into the brig, the fastest yacht in the world won't give you low exit costs.

11:11 AM

Daniel A. Nagy said...

I fail to see how exit costs will be low on the first seasteads. Maintaining a vessel for the sole purpose of being able to leave whenever I want is a huge opportunity cost (there are many better things to do with that same vessel).
I do believe that eventually floating cities will have lower exit costs than land-based countries, but the first seasteads won't have any of that, I'm afraid.

3:14 AM

nick said...

Daniel: *Maintaining a vessel for the sole purpose of being able to leave whenever I want is a huge opportunity cost (there are many better things to do with that same vessel).*

You may be right, but you may also be wrong for at least the following reasons:

(1) Low exit costs can be quite valuable, when one adds up savings on taxes, regulatory burden, etc. when politicians can't take advantage of high exit costs. If the total tax+regulatory burden on a seastead will be only half that on land, for thousands of people this savings may be in the millions of dollars per year, and for millions of people it is easily tens of thousands of dollars per year.

(2) Low exit costs need not be the only reason to live on the ocean. Already thousands of people live for months at a time on the ocean in the offshore oil industry. There may be cost savings (quite aside from jurisdictional arbitrage considerations) from having some of these people live full time on site.

The business of offshore jurisdictional arbitrage is quite real. For decades in Europe, many cruise ships were essentially duty-free shopping malls (I'm not sure to what extent this has continued under the EU).

In your favor, the intersection between (1) and (2) is probably very small (offshore oil workers will save only thousands, not millions, on taxes) and for the vast majority of people the lack of suitable employment and the social isolation of living very far away from most friends and relatives would be too high. (I doubt very many software engineers like Gramlich and Friedman and most of their followers, for example, are actually willing to retrain themselves and take a paycut to work as roustabouts, ROV operators, etc.)

In any case, to the extent seasteading happens I expect it to happen through decentralized efforts, starting with for example an offshore Internet server on a yacht, or a small group of single oil workers deciding to live on the sea full-time until they retire, and expanding from there, rather than through grandiose schemes like the Seasteading Institute. I think that to the extent that SI puts in perspective schemes that are far more ridiculous still (e.g. the many libertarians who have bizarrely supported NASA on the theory that it is going to substantially help bring about space colonization -- I have to plead guilty to this idiocy myself in my younger days) it serves a good purpose.

If there are innovative ways to lower the costs of offshore real estate, the oil industry has the high incentive and funding to make these breakthroughs. These will be company towns, with high exit costs, which we already have substantial experience with. Political experiments utilizing such technology deviating from the company-town model will be smaller-scale follow-ons of such big business efforts.

11:18 AM

Patri Friedman said...

Thanks so much for the thoughtful post!

We've had massive publicity in the past week and a half, what with being on slashdot, gizmodo, wired.com, etc, but your post is one of only 2 that come to mind that actually contained substantive analysis of our idea. I don't have time to respond in detail, and I disagree with a number of your points, but it was a pleasure to read something other than "Duh, Bioshock", "Stupid rich guys!", or "Hey, look at this". Perhaps we can talk about it in more detail sometime in the future.

9:44 PM

Charles Marlow said...

check out this thoughtful but not entirely enthusiastic essay on seasteading at http://tiki38.blogspot.com – from the perspective of a sea-farer

3:00 AM

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